

# PRODUCT INFORMATION

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## READ THIS INFORMATION FIRST

**Product:**     **DSM Module (DSM314) with Firmware Version 3.01**

IC693DSM314-AE

IC694DSM314-AA

Because some of the information in this document is not available elsewhere, we recommend that you read it and save it for future reference.

Release 3.01 of the DSM314 resolves the problem, described in “Problem Resolved by this Release” on page 4, of inconsistent jump operation when executing consecutive CMOVEs. This firmware version provides no new functionality.

## Product Id:

IC693DSM314-AE/IC694DSM314-AA

H/W Id:       AP3B1 (44A737294-G01R03 or later)

S/W Id:       Firmware version: 3.01       App: 44F725986-417AE

## Firmware Update Kit

If you wish to upgrade a previous version of DSM314 to firmware version 3.01, you may purchase upgrade kit number 44A749487-G04, or download the upgrade free of charge from the GE web site at <http://www.ge-ip.com/support>. Any previous version can be upgraded to 3.01.

## Applicable Documents

GFK-1742, *DSM314 User's Manual*

## Special Operational Notes

## CPU Compatibility

The DMS314 can be used with the following CPUs:

IC693CPU350, IC693CPU352, IC693CPU360, IC693CPU363, IC693CPU364, and IC693CPU374.

Requires CPU firmware version 10.00 or higher.

Any IC694 CPU

## Configuration and Programming Software Compatibility

<i><b>DSM Model</b></i>	<i><b>Programming Software</b></i>
IC693DSM314	CIMPLICITY Machine Edition version 2.1 or later. VersaPro version 1.50 or later. Requires Electronic CAM function requires the CAM Editor add-on version 1.0 or later, IC641VPSCAMA.
IC694DSM314	CIMPLICITY Machine Edition version 4.5 or later (includes CAM Editor)

## Essential Configuration Parameters

The following configuration parameters do not default to the settings required for many applications and must be changed by the user or are features not available in this firmware release.

<b>Motor1 Type, Motor2 Type:</b>	For digital servos, Motor Type must be changed to match the specific type number of the motor used. Select type 0 only if no servo is used or in ANALOG mode.
<b>Analog Servo Command</b>	<i>Torque</i> is supported in this firmware release.
<b>Acceleration Feed Forward Percentage</b>	<i>Acceleration Feed Forward Percentage</i> is not supported in this firmware release.
<b>Feedback Source</b>	<i>Feedback Source</i> must use <i>default</i> or <i>Ext Quadrature Encoder</i> . <i>Ext Quadrature Encoder</i> is used with Digital Mode Axis-1 only. Other choices are not supported in this firmware release.
<b>Feedback Mode</b>	If <i>Feedback Source</i> is set to <i>Ext. Quadrature Encoder</i> , then <i>Feedback Mode</i> is always Incremental (even if set to Absolute).
<b>Ramp Makeup Mode</b>	<i>Ramp Makeup Mode</i> must use <i>Makeup Time</i> .
<b>Ramp Makeup Velocity</b>	The <i>Ramp Makeup Velocity</i> is used when the Follower Disable Action is Inc Position or Abs Position and the follower slave axis reverses direction after a follower disable trigger. The ability to reverse direction after a Follower Disable Trigger is an improvement in firmware release 2.0.

## PLC %Q Bits

PLC %Q bits are, by design, RETENTIVE in nature. These bits ONLY become NON-RETENTIVE after their locations are used (programmed) in a PLC program. All motion causing %Q bits such as Drive Enable, Start Motion program, Jog, etc. must be controlled from a programmed PLC coil reference for safe operation.

## Grounding Bars and Clamps

The *DSM314 for IC693 PLCs* User's Manual describes the I/O cable grounding requirements required for a system to meet CE Mark installation guidelines. These guidelines include the use of grounding bars and clamps. A Grounding Bar may be ordered as part number 44B295864-001R02 and a Ground Clamp as part number A99L-0035-0001.

## Cables

Two I/O cables, two command cables, and one communication cable are available for use with the DSM314, as described below. Consult the factory regarding custom length cables.

- IC693CBL324: 1 meter terminal board connection I/O cable
- IC693CBL325: 3 meter terminal board connection I/O cable
- IC800CBL001: 1 meter servo command cable
- IC800CBL002: 3 meter servo command cable
- IC693CBL316: Motion programmer communications cable

### Caution

**The I/O and command cables listed above are custom manufactured with special shielding and internal construction. Substituting nonapproved cables may adversely affect the servo system.**

## Terminal Boards

Two terminal boards for user I/O connections are available for use with the DSM314, as described below.

IC693ACC335: Servo terminal board

IC693ACC336: Auxiliary terminal board

These terminal boards provide screw terminal connections for I/O signals such as Position Strobes, Home Switches, Limit Switches, Analog Inputs, and Analog Outputs. For additional information, refer to Chapter 3 of GFK-1742, *DSM314 User's Manual*.

### Caution

**The terminal blocks contain Metal Oxide Varistor (MOV) circuit protectors, which prevent excessive electrical energy from affecting the DSM314. The maximum recommended input voltage for any of the 24v I/O circuits is 30 VDC with respect to earth ground ("S" terminal) or circuit common.**

## Strobe Input Differences between Analog and Digital Mode

The strobe input faceplate pins for Axis 1 and Axis 2 depend on the DSM servo mode (Analog or Digital). In Digital Mode, the Axis 1 and 2 strobe inputs use faceplate inputs IN1 and IN2, which can be either single ended or differential. In Analog mode, the Axis 1 and 2 strobe inputs use faceplate inputs IO5 and IO6, which are single ended only. Axes 3 and 4 always use IO5 and IO6 as the strobe inputs.

**Note:** The input circuits for IO5 and IO6 contain 4.7k pullup resistors to internal +5v. If no signal is connected to these inputs, the input will always appear to be ON. Normally a single ended TTL or CMOS driver must be used to drive these circuits from the strobe sensor.

The strobe inputs are summarized in the table below.

<b>Servo Type</b>	<b>Axis 1 Strobe Inputs</b>	<b>Axis 2 Strobe Inputs</b>	<b>Axis 3 Strobe Inputs</b>	<b>Axis 4 Strobe Inputs</b>
Digital	IN1_A, IN2_A (Single Ended or Differential)	IN1_B, IN2_B (Single Ended or Differential)		
Analog	IO5_A, IO6_A (Single Ended)	IO5_B, IO6_B (Single Ended)	IO5_C, IO6_C (Single Ended)	IO5_D, IO6_D (Single Ended)

## Follower Disable and Abort Operation

When the follower function is active, the DSM Abort %Q bit DOES NOT disable the follower function. The user can immediately halt motion by turning off the Enable Follower %Q bit. Thus, the Abort %Q bit halts programmed motion, and the Enable Follower %Q bit halts follower motion. This operation is different from DSM314 releases 1.0 and 1.1. In these earlier releases the abort %Q bit halted both programmed motion and follower motion.

## CAM in Absolute Mode can Lose Synch if Master Drive is Disabled

If the Master Drive is Disabled and then Re-enabled, the CAM axis will lose master counts that result from master axis motion while the master axis is disabled. In Absolute mode, this can cause the CAM axis to lose synch from the absolute master value. It is recommended that when the CAM command is operated in absolute mode, the CAM be aborted when the master axis is disabled.

## Problem Resolved by this Release

### Inconsistent Jump Operation when executing consecutive CMOVEs

When a motion program has a Jump command active during a CMOVE that results in executing another CMOVE, operation of the servo motion should not stop if the latter CMOVE is valid. However, for certain velocity and acceleration combinations, the DSM would incorrectly stop motion between the CMOVEs. This has been corrected in firmware version 3.01

## New Features and Functionality of this Release

None

## Restrictions and Open Problems

<b><i>Restriction/Problem</i></b>	<b><i>Description</i></b>
Cyclic Circular CAM with Negative-going Master - problem w/CAM blend and 2nd CAM is ABS	This problem is restricted to a <b>cyclic-circular CAM in absolute master mode</b> in a <b>sequence of CAMs</b> with the <b>master going backward</b> : If the master has already rolled over (moved a few counts) in the previous CAM and the slave did not roll over (because the previous CAM exited), the slave will not automatically rollover backwards into the next sequential CAM without an intervening Move command. Otherwise, this could generate a velocity limit error as the slave attempts to move without rolling over to the corresponding value matching the current master position.